



ILLINOIS NATURAL
HISTORY SURVEY
T E C H N I C A L R E P O R T

Breeding birds of Thomson grasslands,
Carroll and Whiteside Counties, Illinois

Daniel G. Wenny
INHS Division of Ecology and Conservation Science
Lost Mound Field Station
3159 Crim Dr.
Savanna, IL 61074

Prepared for:

Russ Engelke
U.S. Fish and Wildlife Service - Savanna District
7071 Riverview Rd.
Thomson, IL 61285

And

Ed Anderson
Illinois Department of Natural Resources
Division of Natural Heritage
3159 Crim Dr.
Savanna, IL 61074

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INTRODUCTION

A sand terrace formed about 8,000 years ago from glacial outwash stretches from Savanna south to Fulton, Illinois. Mesic and dry-mesic sand prairie once covered approximately 50,000 acres (20,240 ha) of this sand terrace. Now, irrigated crop fields cover much of the terrace. The Thomson grassland areas (along with Ayers Sand Prairie Nature Preserve near the Savanna airport) are practically the only remnants of prairie in this area. As in much of the midwest prairie region this habitat transformation represents a loss of approximately 99.98% of the original vegetation. These sites are accessible along the bike trail from the north at Thomson Causeway campground and from the south at Lock & Dam 13.

Birds can be useful as indicators of habitat management and environmental change. This report is intended as a preliminary list of breeding birds in the Thomson grassland areas. The information presented here is compiled from surveys and other field work between 2000 and 2006. Most of this work is part of long-term monitoring for comparison with similar work at Ayers Sand Prairie State Nature Preserve and Lost Mound Unit (former Savanna Army Depot) to the north.

STUDY SITES

Thomson Grassland

The Thomson grasslands are immediately south of Thomson, Illinois and west of the railroad tracks (and highway 84) in southwestern Carroll County (Figure 1). This site is part of the Savanna District of the Upper Mississippi River National Wildlife and Fish Refuge. The southern portion includes 160 acres of remnant sand prairie with pines (*Pinus banksiana* and *P. resinosa*) planted in rows between units. The northern portion includes 193 acres of recreated prairie and former hay fields with mostly deciduous trees in rows between units. The entire site is bounded to the west by bottomland forest and backwater wetlands of the Mississippi River.

Thomson Fulton Nature Preserve

This state nature preserve (hereafter TFNP) is essentially a continuation of the federally owned land with approximately 6 acres of privately owned pine plantation in between the two grasslands areas. This pine plantation can be seen at the bottom of Figure 1 and top of Figure 2. TFNP contains about 212 acres of remnant sand prairie owned by US Corps of Engineers and Illinois Department of Natural Resources. The northern 1/3 of this site was cultivated at some point in the past but probably not for very long because native warm-season grasses dominate the site. TFNP is bounded to the east by the bike trail, railroad tracks, and an extensive pine plantation. To the west, between TFNP and floodplain habitats, lie a series of cabins and houses.

Thomson Grassland

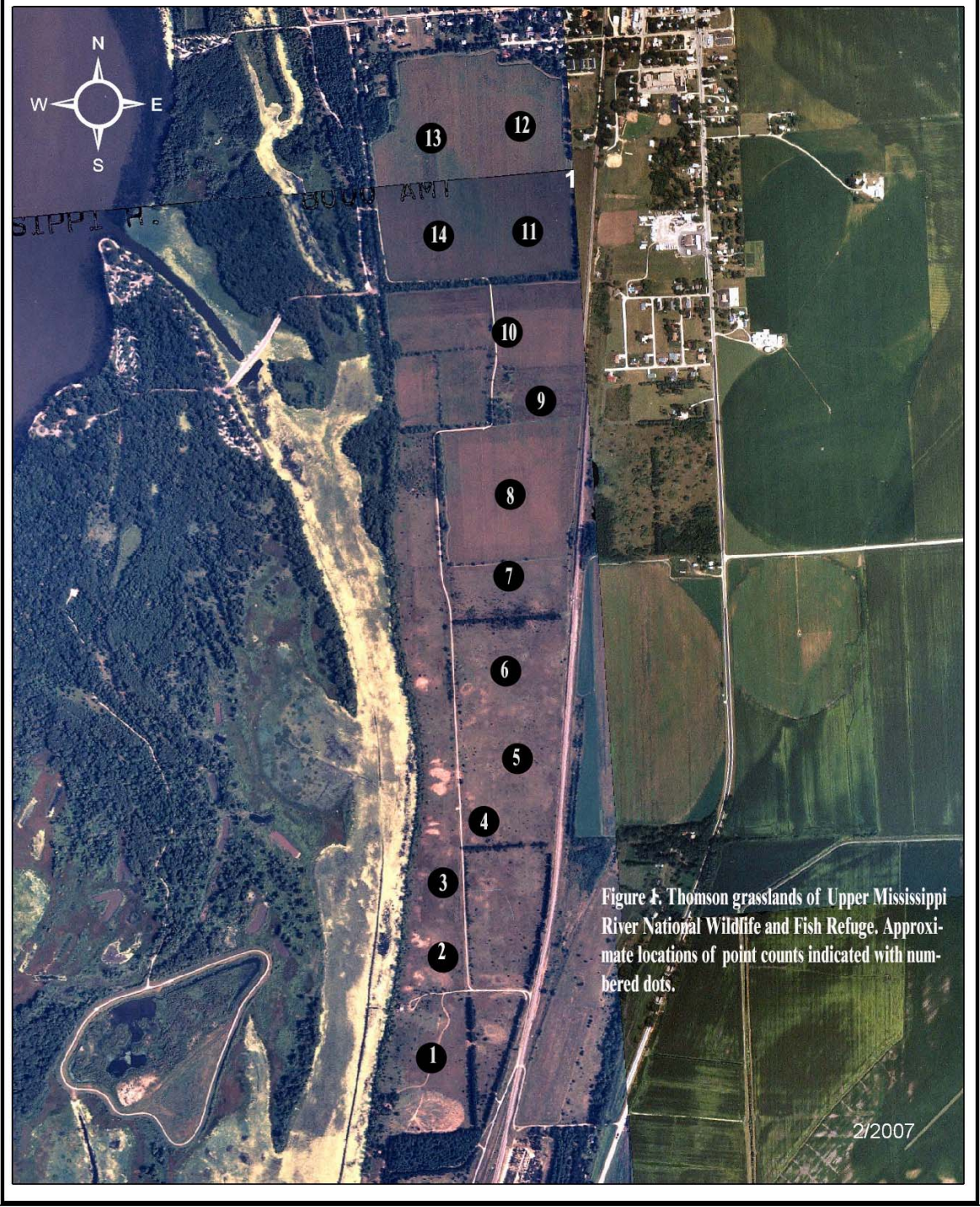


Figure 4. Thomson grasslands of Upper Mississippi River National Wildlife and Fish Refuge. Approximate locations of point counts indicated with numbered dots.

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Thomson Fulton Sand Prairie

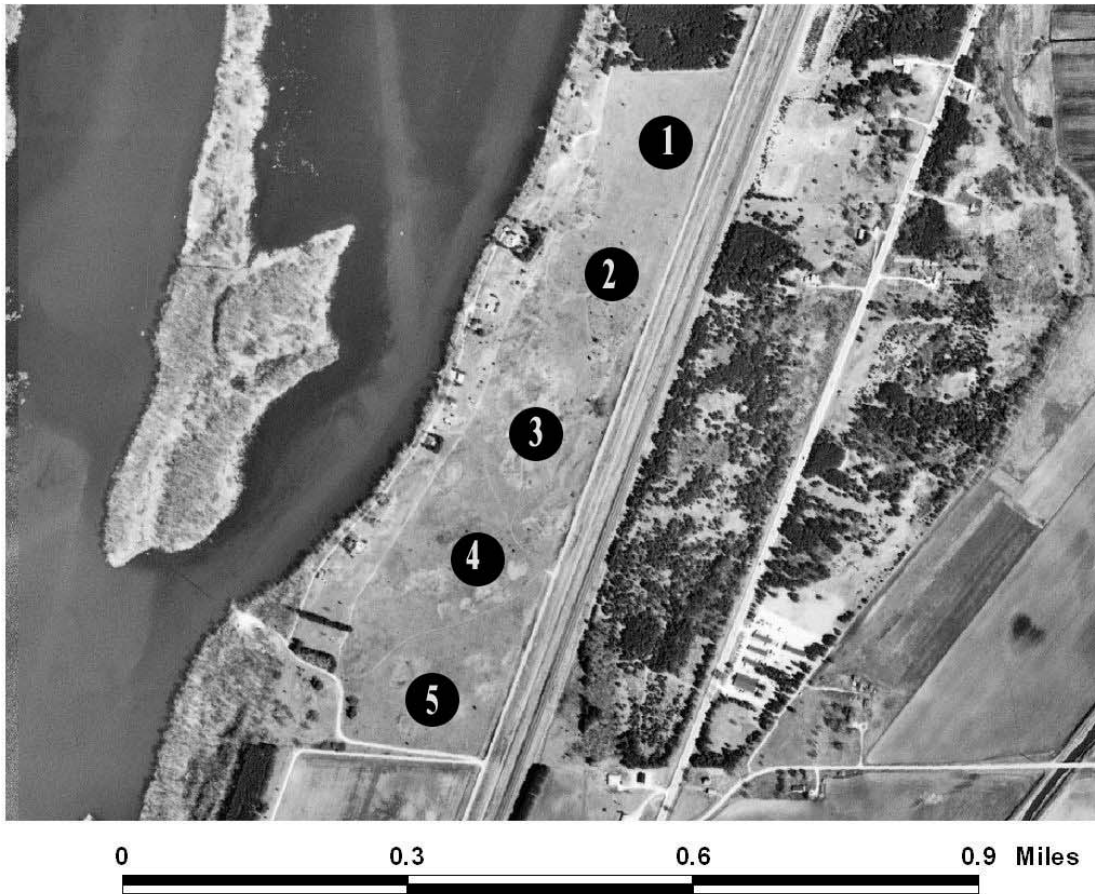
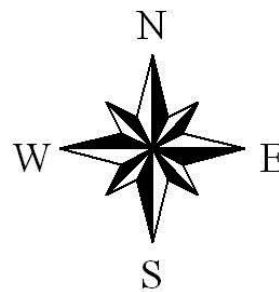


Figure 2. Thomson Fulton Nature Preserve.
Approximate locations of point counts indicated with
numbered dots.



METHODS

Point counts

Birds were counted at 19 variable-distance point count locations; 14 at Thomson grassland and 5 at Thomson Fulton (Figures 1 and 2). Points were located to maximize the area of grassland within 100-m radius and to include as few trees as possible. At each point all birds seen or heard were counted for 5 minutes. All counts were conducted between 5:00 AM and 11:00 AM between May 25 and June 12. Counts were conducted once at each point each in 2000, 2001, and 2002 at Thomson grassland and 2000-2003 and 2005 at Thomson Fulton. Each bird observation was classified as within 100m radius, beyond 100m radius, or in flight. This classification allows compilation of more complete species lists for the sites while also providing more specific information on birds that are most commonly found in the grassland areas with the 100m radii of the count locations. Because the sites are fairly narrow, species recorded predominately beyond 100m or as flyovers represent the avifauna of adjacent habitats. However, I did not record species heard very far away, such as sandhill cranes. Distances were estimated in the first years and measured with a laser rangefinder in 2003 and 2005.

Banding

All banding at Thomson grassland was done in northern half of burn unit 15 around point count location 6 (Figure 1). This site was chosen based on the relatively high numbers of grasshopper sparrows recorded during point counts. Grasshopper sparrows are the focus of a long-term study not discussed in detail here. Birds were captured in mist nets between dawn and 11:00 AM. I used a variety of lengths, heights, and mesh sizes depending on the vegetation at a specific site. In the early years grasshopper sparrows tended to perch on cedars and small pines but as these were removed mullein (*Verbascum thapsus*), blazing star (*Liatrix aspera*), and a few pines that were cut but not removed were the most frequent perches. Nets were checked every 15-20 minutes. Birds were removed from nets, measured, banded, and released. In a few cases when several birds were captured at the same time all species but grasshopper sparrows were released immediately without measurement or banding. All species banded received a numbered aluminum band. Grasshopper sparrows also got three plastic color bands to facilitate individual identification and territory mapping. One bird on 6 July 2001 escaped during banding and only has one color band. In 2006 specific net locations were mapped with GPS units. In all other years nets locations were mapped by hand with use of a laser range finder. No banding was done at TFNP.

RESULTS AND DISCUSSION

Point counts

Thomson Grassland – Over the three years 62 species were recorded. Of these, 29 were observed within 100m, 41 species beyond 100m and 33 species as flyovers (Table 1). Twelve species were recorded only beyond 100m and nineteen only as flyovers. No species were observed only within 100m and not also in the other categories.

Thomson Fulton –A total of 56 species were recorded over five years of counts at TFNP. Of these, 26 were observed within 100m, 39 species beyond 100m and 27 species as flyovers (Table 2). Two species were observed only within 100m, fifteen only beyond 100m, and thirteen only as flyovers.

The number of species and distribution of observations across distance categories was similar at the two sites. Approximately 50% of the species and 70% of the individuals were observed beyond 100m or as flyovers at both sites. Several species were observed at one site but not the other making the combined list total 73 species (Appendix 1). This total includes three species not recorded during point counts or banding but during the course of other field work. The Thomson avifauna includes eleven species of conservation concern including eight of confirmed or potential grassland-nesting species and two savanna-nesting species.

Grassland species – At both sites grasshopper sparrow, eastern meadowlark, and field sparrow were the typical grassland species. These three species (with the exception of field sparrow at TFNP) were the only species typically observed within 100m radius with an overall abundance of over 1 bird per point count location averaged over the entire sites (Tables 1 and 2, column 8). Mourning dove at TFNP also exceeded this threshold but were more often observed beyond 100m and as flyovers than within 100m at both Thomson and TFNP. Nevertheless, mourning doves do nest on the ground in grasslands, particularly in spring (summer and fall nests are usually in trees). Dickcissel, common yellowthroat, and lark sparrow were less common but found at both Thomson grassland and TFNP. The yellowthroat is also found in wetlands and occurred with 100m only at the northern portion of Thomson. Lark sparrow nests on the ground in very sparsely vegetated areas especially areas with open sand.

Other grassland-dependent species at Thomson grassland include Henslow's sparrow, northern harrier, and ring-necked pheasant. Blue-winged teal and mallard were recorded as flyovers at TFNP but nest in grasslands at other sites (including Ayers and Lost Mound) so are potential breeders for this area. Killdeer is another potential grassland breeder but was more commonly recorded beyond 100m and flying over. The relatively high abundance of northern bobwhite at both Thomson and TFNP indicate the level of woody encroachment in the grassland (especially at Thomson prior to recent control efforts) and abundance of woody cover adjacent to the grasslands.

Non-grassland species – Most of the other species observed are either wetland species heard beyond 100m or seen flying over, or species that nest in trees in hedgerows or woodland edge. A subset of the latter group include some grassland-dependent species sometimes found in pastures such as loggerhead shrike, eastern bluebird, eastern kingbird, American goldfinch, and chipping sparrow. The higher abundance of the latter species at TFNP than at Thomson beyond 100m reflects their preference for the lawns found in the river edge cabins west of the prairie, and pines for nesting in cabin area as well as the plantations to north and south.

A striking result from both sites (especially TFNP) was the high numbers of common grackles. In most cases grackles were seen flying between the pines and the river edge habitats. The grackles nest in the pine plantations and hedgerows and forage in wetlands. Occasionally they landed in the grassland (or in trees in grassland) and sometimes appeared to forage in grasslands.

A similar situation occurs at Ayres Sand Prairie where the grackles nest in pines in a housing development to the west of the preserve and forage in the wetlands to the northeast. These observations raise the question of what impact grackles may have on grassland-dependent species. While a few other species may benefit from the pines, such as Cooper's hawk, chipping sparrow, and American crow, their proximity to the prairie and grassland areas are probably detrimental. The impacts of the pines on grasslands include shading, woody encroachment, corridors and cover for nest and nestling predators, and nest sites for competitors and nest predators.

Banding

Over the seven-year period I banded 139 individuals of 15 species (Table 3). The vast majority of these were grasshopper sparrows (GRSP) as they are the focus of a long-term study. The other species banded represent those that either nest in the same field as GRSP (field and lark sparrows, eastern meadowlark, yellowthroat) or happened to be captured while passing through GRSP territories. This latter category includes mostly species that nest in shrubs or trees and were passing from one hedgerow to another (orioles, cardinal, thrasher, chickadee, waxwing, or species flying into the grasslands to forage (barn swallow, robin). The numbers of birds captured do not reflect relative abundances because I was specifically trying to capture grasshopper sparrows and limit captures of other species. Fewer captures of shrub- and tree-nesting species in 2005 and 2006 reflects ongoing management to remove woody vegetation within and adjacent to the grasslands. No species were captured that were not also recorded during point counts. The list in Table 3 will provide quick reference for any banded birds from this study encountered by others.

Summary

The prairie remnants and restored grasslands in the Thomson area contain a small subset of the grassland birds that occur in the region. While three species were fairly common (eastern meadowlark, grasshopper sparrow, field sparrow), most other grassland species were rare. This situation is most a result of landscape features. Both sites are relatively small, long and narrow, isolated from other grasslands and adjacent to much non-native vegetation and relatively inhospitable habitat. Little can be done to address these issues. However, continued removal of pines, especially in the southern portion of the federal grasslands, would benefit grassland species without much impact on other species of conservation concern. The cabins west of TFNP and the town of Thomson north and east of the northern portion of Thomson grassland are a potential source of invasive plants species, predators (cats), disturbance (noise, ATVs, poaching) and debris.

Table 1. Birds recorded during point counts at Thomson Grassland 2000 – 2002. Columns include total number of birds seen or heard over the three years within 100 m radius, beyond 100m radius, flying overhead, the total of the first three categories, the total number of points at which each species was observed (out of 36), the average number of each species per point at points each was observed (total/total pts), the average number of each species at all points (36), and the number of years each species was recorded.

Species	3-Yr Total 100m	3-Yr Total >100m	3-Yr Total Flyover	3-Yr Total	3-Yr Total pts	Overall avg/pt	Overall avg/area	Yrs recorded
American Crow	0	12	0	12	7	1.7	0.3	3
American Goldfinch	3	1	26	30	14	2.1	0.8	3
American Redstart	5	1	0	6	4	1.5	0.2	3
American Robin	2	18	8	28	20	1.4	0.8	3
Baltimore Oriole	4	6	1	11	11	1.0	0.3	3
Barn Swallow	0	0	8	8	6	1.3	0.2	3
Black-capped Chickadee	2	3	0	5	3	1.7	0.1	2
Belted Kingfisher	0	0	1	1	1	1.0	0.0	1
Brown-headed Cowbird	3	0	9	12	8	1.5	0.3	3
Blue Jay	4	8	2	14	9	1.6	0.4	3
Brown Thrasher	3	12	0	15	11	1.4	0.4	3
Canada Goose	0	0	3	3	1	3.0	0.1	1
Cedar Waxwing	0	0	6	6	2	3.0	0.2	2
Chipping Sparrow	5	2	1	8	7	1.1	0.2	3
Chimney Swift	0	0	6	6	3	2.0	0.2	2
Common Grackle	0	0	48	48	18	2.7	1.3	3
Cooper's Hawk	0	0	1	1	1	1.0	0.0	1
Common Yellowthroat	9	7	0	16	14	1.1	0.4	3
Double-crested Cormorant	0	0	3	3	2	1.5	0.1	1
Dickcissel	5	8	1	14	9	1.6	0.4	3
Downy Woodpecker	0	3	0	3	2	1.5	0.1	1
Eastern Bluebird	0	2	0	2	2	1.0	0.1	2
Eastern Kingbird	9	1	3	13	11	1.2	0.4	3
Eastern Meadowlark	32	23	0	55	31	1.8	1.5	3
Eastern Wood-Pewee	0	2	3	5	5	1.0	0.1	2
European Starling	0	1	0	1	1	1.0	0.0	1
Field Sparrow	24	17	0	41	22	1.9	1.1	3
Great Crested Flycatcher	3	2	0	5	4	1.3	0.1	2
Gray Catbird	2	2	0	4	4	1.0	0.1	2
Great Egret	0	0	5	5	3	1.7	0.1	2
Green Heron	0	0	1	1	1	1.0	0.0	1
Grasshopper Sparrow	44	12	0	56	26	2.2	1.6	3
Great Blue Heron	0	0	2	2	2	1.0	0.1	2
Hairy Woodpecker	0	0	1	1	1	1.0	0.0	1
Henslow's Sparrow	5	3	0	8	6	1.3	0.2	2
House Wren	3	15	0	18	14	1.3	0.5	3
Indigo Bunting	0	7	0	7	7	1.0	0.2	3

Birds of Thomson grassland areas - 9

Species	3-Yr Total 100m	3-Yr Total >100m	3-Yr Total Flyover	3-Yr Total	3-Yr Total pts	Overall avg/pt	Overall avg/area	Yrs recorded
Killdeer	0	1	1	2	2	1.0	0.1	2
Lark Sparrow	8	1	0	9	7	1.3	0.3	3
Loggerhead Shrike	0	0	1	1	1	1.0	0.0	1
Mallard	0	0	9	9	6	1.5	0.3	2
Mourning Dove	3	4	12	19	11	1.7	0.5	3
Northern Bobwhite	2	28	0	30	20	1.5	0.8	3
Northern Cardinal	7	15	0	22	17	1.3	0.6	3
Northern Flicker	1	2	1	4	4	1.0	0.1	3
Northern Harrier	1	0	0	1	1	1.0	0.0	1
N. Rough-winged Swallow	0	0	1	1	1	1.0	0.0	1
Orchard Oriole	2	3	1	6	6	1.0	0.2	3
Purple Martin	0	0	1	1	1	1.0	0.0	1
Rose-breasted Grosbeak	0	1	0	1	1	1.0	0.0	1
Ring-billed Gull	0	0	3	3	1	3.0	0.1	1
Red-bellied Woodpecker	0	2	0	2	2	1.0	0.1	2
Ring-necked Pheasant	0	1	0	1	1	1.0	0.0	1
Red-winged Blackbird	7	8	17	32	24	1.3	0.9	3
Scarlet Tanager	0	5	0	5	5	1.0	0.1	3
Tree Swallow	0	0	16	16	8	2.0	0.4	3
Turkey Vulture	0	0	2	2	1	2.0	0.1	1
Warbling Vireo	1	3	0	4	4	1.0	0.1	2
White-breasted Nuthatch	1	1	0	2	2	1.0	0.1	2
Wild Turkey	0	1	0	1	1	1.0	0.0	1
Yellow-billed Cuckoo	0	8	0	8	8	1.0	0.2	3
Yellow Warbler	0	2	0	2	2	1.0	0.1	2
# Species	29	41	33	62				
# Individuals	200	254	204	658				

Table 2. Birds recorded during point counts at Thomson Fulton Nature Preserve 2000 – 2003 and 2005. Columns include total number of birds seen or heard over the five years within 100 m radius, beyond 100m radius, flying overhead, the total of the first three categories, the total number of points at which each species was observed (out of 25), the average number of each species per point at points each was observed (total/total pts), the average number of each species at all points (25), and the number of years each species was recorded.

Species	5-Yr Total <100m	5-Yr Total >100m	5-Yr Total Flyover	5-Yr Total	5-Yr Total pts	Overall avg/pt	Overall avg/area	Yrs recorded
American Crow	1	5	6	12	7	1.7	0.5	5
American Goldfinch	1	0	9	10	7	1.4	0.4	4
American Redstart	0	1	0	1	1	1.0	0.0	1
American Robin	4	10	1	15	9	1.7	0.6	5
Bank Swallow	0	0	2	2	1	2.0	0.1	1
Baltimore Oriole	3	6	9	18	11	1.6	0.7	5
Barn Swallow	0	0	5	5	3	1.7	0.2	2
Black-capped Chickadee	0	3	0	3	3	1.0	0.1	2
Brown-headed Cowbird	3	2	8	13	10	1.3	0.5	5
Blue Grosbeak	0	1	0	1	1	1.0	0.0	1
Blue Jay	0	4	1	5	5	1.0	0.2	3
Brown Thrasher	2	5	0	7	6	1.2	0.3	4
Blue-winged Teal	0	0	1	1	1	1.0	0.0	1
Canada Goose	0	0	10	10	3	3.3	0.4	3
Cedar Waxwing	1	0	0	1	1	1.0	0.0	1
Chipping Sparrow	9	9	0	18	12	1.5	0.7	5
Chimney Swift	0	0	4	4	2	2.0	0.2	1
Cliff Swallow	0	0	1	1	1	1.0	0.0	1
Common Grackle	6	11	143	160	23	7.0	6.4	5
Cooper's Hawk	0	1	0	1	1	1.0	0.0	1
Common Yellowthroat	0	1	0	1	1	1.0	0.0	1
Double-crested Cormorant	0	0	4	4	4	1.0	0.2	3
Dickcissel	9	4	1	14	11	1.3	0.6	4
Eastern Bluebird	0	3	0	3	2	1.5	0.1	2
Eastern Kingbird	16	4	0	20	13	1.5	0.8	5
Eastern Meadowlark	25	18	0	43	24	1.8	1.7	5
Eastern Phoebe	1	2	0	3	3	1.0	0.1	3
Eastern Wood-Pewee	0	1	0	1	1	1.0	0.0	1
European Starling	1	0	8	9	5	1.8	0.4	3
Field Sparrow	8	14	0	22	18	1.2	0.9	5
Great Crested Flycatcher	0	2	0	2	2	1.0	0.1	2
Gray Catbird	2	1	0	3	3	1.0	0.1	3
Great Egret	0	0	2	2	2	1.0	0.1	2
Grasshopper Sparrow	48	7	0	55	23	2.4	2.2	5
Great Blue Heron	0	0	1	1	1	1.0	0.0	1
Hairy Woodpecker	0	0	1	1	1	1.0	0.0	1
House Wren	0	7	0	7	6	1.2	0.3	4

Birds of Thomson grassland areas - 11

Species	5-Yr Total <100m	5-Yr Total >100m	5-Yr Total Flyover	5-Yr Total	5-Yr Total pts	Overall avg/pt	Overall avg/area	Yrs recorded
Indigo Bunting	2	7	0	9	8	1.1	0.4	5
Killdeer	1	1	3	5	3	1.7	0.2	3
Lark Sparrow	13	1	0	14	9	1.6	0.6	4
Mallard	0	0	4	4	2	2.0	0.2	2
Mourning Dove	5	16	7	28	17	1.6	1.1	5
Northern Bobwhite	4	17	0	21	15	1.4	0.8	5
Northern Cardinal	3	12	0	15	11	1.4	0.6	5
Northern Flicker	0	2	0	2	2	1.0	0.1	2
N. Rough-winged Swallow	0	0	4	4	2	2.0	0.2	2
Orchard Oriole	2	2	3	7	6	1.2	0.3	4
Purple Martin	0	0	3	3	1	3.0	0.1	1
Rose-breasted Grosbeak	0	2	0	2	2	1.0	0.1	1
Red-bellied Woodpecker	0	2	0	2	2	1.0	0.1	2
Red-tailed Hawk	0	1	0	1	1	1.0	0.0	1
Red-winged Blackbird	6	5	8	19	10	1.9	0.8	5
Tree Swallow	0	1	13	14	7	2.0	0.6	4
Warbling Vireo	0	9	0	9	9	1.0	0.4	4
Yellow Warbler	1	0	0	1	1	1.0	0.0	1
Yellow-throated Vireo	0	1	0	1	1	1.0	0.0	1
# Species	26	39	27	56				
# Individuals	177	201	262	640				

Table 3. List of all birds banded at Thomson Grassland Unit 15. List organized alphabetically by species and by band number within species. Age codes include hatch year (HY), after hatch year (AHY), and after second year (ASY). Color bands were used only on Grasshopper sparrows. Colors include blue (B), light blue (b), green (G), light green (g), orange, (O), pink (P – 2006 only), purple (P – 2000-2004, M – 2005-2006), red (R), yellow (Y) and white (W). Sequence of color bands shown is right leg top, right leg bottom, left leg top, left leg bottom with X indicating placement of numbered aluminum band.

Species	Year	Month	Day	Age	Sex	band number	Color	Wing (mm)	Mass (g)
American Robin	2002	6	24	HY	?	1162-87530		124.5	75.0
Baltimore Oriole	2001	6	25	AHY	M	1631-97466		91.0	32.0
Baltimore Oriole	2002	7	26	HY	M	1631-97449		92.0	28.0
Baltimore Oriole	2005	6	28	ASY	M	1631-97471		96.0	30.5
Baltimore Oriole	2006	6	15	ASY	M	1631-97484		95.0	
Barn Swallow	2000	7	17	HY	?	2170-55231		110.0	16.0
Black-capped Chickadee	2002	6	24	AHY	F	2170-55278		61.0	12.0
Black-capped Chickadee	2002	7	3	AHY	F	2170-55285		60.0	12.0
Brown Thrasher	2002	7	3	AHY	M	1503-04326		105.0	64.0
Brown Thrasher	2004	7	8	AHY	F	1162-87540		100.0	68.0
Cedar Waxwing	2002	7	19	AHY	F	1641-61680		95.0	37.5
Chipping Sparrow	2001	6	20	AHY	M	2170-55286		61.0	14.0
Common Yellowthroat	2001	6	6	ASY	M	2170-55265		57.0	10.5
Common Yellowthroat	2001	6	7	ASY	M	2170-55266		57.0	11.0
Eastern Meadowlark	2001	7	16	AHY	F	1503-04316		102.0	77.5
Eastern Meadowlark	2002	7	19	HY	?	1162-87533		105.0	76.5
Eastern Meadowlark	2002	7	19	HY	?	1162-87534		110.0	89.0
Eastern Meadowlark	2002	7	19	HY	?	1503-04317		100.0	69.0
Field Sparrow	2000	7	7	HY	?	2170-55227		68.0	12.0
Field Sparrow	2000	7	7	AHY	F	2170-55228		59.0	12.5
Field Sparrow	2000	7	7	AHY	M	2170-55229		62.0	12.5
Field Sparrow	2000	7	17	AHY	F	2170-55230		63.0	12.0
Field Sparrow	2000	6	8	AHY	M	2180-74803		67.0	
Field Sparrow	2000	6	8	HY	?	2180-74804			11.0
Field Sparrow	2000	6	8	AHY	M	2180-74805		64.0	12.0
Field Sparrow	2000	7	7	AHY	F	2180-74806		62.0	12.5
Field Sparrow	2001	6	7	AHY	M	2170-55267		62.0	12.5
Field Sparrow	2001	6	25	AHY	M	2170-55287		63.0	13.0
Field Sparrow	2001	6	28	AHY	F	2170-55288		60.0	11.5
Field Sparrow	2002	6	5	AHY	F	2170-55276		62.0	12.5
Field Sparrow	2002	6	6	AHY	M	2170-55277		64.0	12.0
Field Sparrow	2002	6	27	AHY	M	2170-55279		62.0	13.0
Field Sparrow	2002	7	3	AHY	F	2170-55289			
Field Sparrow	2002	7	3	AHY	M	2170-55290		62.0	12.0
Field Sparrow	2004	6	9	AHY	M	2170-55293		68.0	13.0
Field Sparrow	2004	7	8	AHY	M	2170-55294		63.0	12.5
Field Sparrow	2004	6	14	AHY	M	2180-74805		65.0	12.5
Field Sparrow	2005	6	17	AHY	F	2180-74839		62.0	12.0

Birds of Thomson grassland areas - 13

Species	Year	Month	Day	Age	Sex	band number	Color	Wing (mm)	Mass (g)
Field Sparrow	2005	6	17	AHY	F	2180-74840		59.0	13.5
Field Sparrow	2005	7	6	AHY	F	2180-74842		65.0	14.0
Field Sparrow	2006	7	25	AHY	F	2180-74850		62.0	12.0
Grasshopper Sparrow	2000	6	8	AHY	M	1691-09912	bX-OP	63.0	18.5
Grasshopper Sparrow	2000	6	8	AHY	M	1691-09913	bX-WG	61.0	18.0
Grasshopper Sparrow	2000	6	8	AHY	M	1691-09914	PX-RO	64.0	17.0
Grasshopper Sparrow	2000	6	8	AHY	F	1691-09915	RX-gB	61.0	16.5
Grasshopper Sparrow	2000	6	8	AHY	F	1691-09916	gX-BW	61.0	15.5
Grasshopper Sparrow	2000	7	7	AHY	M	1691-09920	bX-BO	63.0	16.5
Grasshopper Sparrow	2000	7	14	AHY	F	1691-09926	WX-YG	64.0	17.0
Grasshopper Sparrow	2000	7	14	AHY	M	1691-09927	WX-Wg	61.0	16.0
Grasshopper Sparrow	2000	7	14	HY	?	1691-09928	PX-WO		15.0
Grasshopper Sparrow	2000	7	14	AHY	M	1691-09929	bX-RG	65.0	16.0
Grasshopper Sparrow	2000	7	14	AHY	M	1691-09930	YX-gG	63.0	18.0
Grasshopper Sparrow	2000	7	17	AHY	M	1691-09931	RX-GP	64.0	17.0
Grasshopper Sparrow	2000	7	17	HY	?	1691-09932	BX-Rb	59.0	16.5
Grasshopper Sparrow	2000	7	17	HY	?	1691-09933	GX-WW	57.0	14.5
Grasshopper Sparrow	2000	7	17	AHY	M	1691-09934	YX-PW	63.0	17.5
Grasshopper Sparrow	2000	7	17	AHY	F	1691-09935	BX-bg	63.0	16.5
Grasshopper Sparrow	2000	7	17	AHY	F	1691-09936	GX-GG	63.0	14.5
Grasshopper Sparrow	2001	6	6	AHY	M	1691-09960	GBXW	63.0	17.0
Grasshopper Sparrow	2001	6	6	AHY	M	1691-09961	Gg-XR	63.0	16.5
Grasshopper Sparrow	2001	6	6	AHY	M	1691-09962	bO-XW	63.0	17.0
Grasshopper Sparrow	2001	6	6	AHY	F	1691-09963	Bb-XO	59.0	15.0
Grasshopper Sparrow	2001	6	6	AHY	M	1691-09964	PG-XW	61.0	18.5
Grasshopper Sparrow	2001	6	6	AHY	F	1691-09965	YY-XB	63.0	18.0
Grasshopper Sparrow	2001	6	7	AHY	M	1691-09966	gP-Xb	61.0	16.0
Grasshopper Sparrow	2001	6	7	AHY	M	1691-09967	PO-XG	62.0	18.0
Grasshopper Sparrow	2001	6	7	AHY	F	1691-09968	GR-Xg	61.0	19.5
Grasshopper Sparrow	2001	6	7	AHY	F	1691-09969	GY-XO	60.0	20.5
Grasshopper Sparrow	2001	7	13	HY	?	1691-09999	RO-XY	59.0	15.5
Grasshopper Sparrow	2001	7	13	AHY	M	1691-10000	Rb-Xb	61.0	17.5
Grasshopper Sparrow	2001	7	6	HY	?	2081-96106	PB-XO	54.0	14.0
Grasshopper Sparrow	2001	7	6	HY	?	2081-96107	WW-XR	56.0	14.5
Grasshopper Sparrow	2001	7	6	HY	?	2081-96108	W-X		
Grasshopper Sparrow	2001	7	6	AHY	F	2081-96109	bR-Xg	59.0	15.5
Grasshopper Sparrow	2001	7	6	HY	?	2081-96110	YY-XG	57.0	17.5
Grasshopper Sparrow	2001	7	6	AHY	M	2081-96111	BB-XG	61.0	20.0
Grasshopper Sparrow	2001	7	6	AHY	M	2081-96112	bG-XB	61.0	17.5
Grasshopper Sparrow	2001	7	13	HY	?	2081-96113	PY-XO	57.0	14.5
Grasshopper Sparrow	2001	7	13	HY	?	2081-96114	OB-XR	55.0	15.0
Grasshopper Sparrow	2001	7	13	AHY	M	2081-96120	GY-XY	60.0	17.0
Grasshopper Sparrow	2001	7	13	HY	?	2081-96121	GG-XG		
Grasshopper Sparrow	2001	7	16	AHY	F	2081-96122	gR-XR	58.0	20.5
Grasshopper Sparrow	2001	7	16	AHY	F	2081-96123	BO-XW	58.0	16.5
Grasshopper Sparrow	2002	6	5	AHY	M	2081-96151	OB-GX	63.0	17.5

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Species	Year	Month	Day	Age	Sex	band number	Color	Wing (mm)	Mass (g)
Grasshopper Sparrow	2002	6	27	AHY	M	2081-96156	Og-OX	63.0	17.0
Grasshopper Sparrow	2002	7	12	HY	?	2081-96162	BB-RX	56.0	15.0
Grasshopper Sparrow	2002	7	13	HY	?	2081-96163	OO-GX	57.0	16.0
Grasshopper Sparrow	2002	7	16	HY	?	2081-96165	RR-bX	58.0	14.5
Grasshopper Sparrow	2002	7	18	AHY	M	2081-96171	PO-OX	61.5	18.5
Grasshopper Sparrow	2002	7	19	HY	?	2081-96172	WB-bX	59.5	16.0
Grasshopper Sparrow	2002	7	3	AHY	F	2081-96177	BB-BX	60.0	16.0
Grasshopper Sparrow	2004	6	9	AHY	F	2081-96192	XG-GP	60.0	20.0
Grasshopper Sparrow	2004	6	9	AHY	F	2081-96193	XB-bY	62.0	19.0
Grasshopper Sparrow	2004	6	9	AHY	F	2081-96194	XG-gg	63.0	17.5
Grasshopper Sparrow	2004	7	15	AHY	M	2081-96195	XW-OB	61.0	18.0
Grasshopper Sparrow	2004	7	8	AHY	M	2081-96213	Xg-bY	62.0	17.0
Grasshopper Sparrow	2004	7	8	AHY	M	2081-96214	Xg-gY	63.0	18.5
Grasshopper Sparrow	2004	7	8	AHY	M	2081-96215	Xb-YP	62.0	18.0
Grasshopper Sparrow	2004	7	15	HY	?	2081-96223	XG-GW	60.0	16.5
Grasshopper Sparrow	2004	7	15	AHY	M	2081-96224	XG-Rg	60.0	17.0
Grasshopper Sparrow	2004	7	15	AHY	M	2081-96225	XW-Yg	65.0	18.0
Grasshopper Sparrow	2004	7	15	AHY	M	2081-96226	XR-YP	62.0	18.0
Grasshopper Sparrow	2004	7	15	AHY	M	2081-96227	Xb-gY	64.0	16.5
Grasshopper Sparrow	2004	7	19	AHY	M	2081-96237	XW-OB		
Grasshopper Sparrow	2004	7	19	AHY	M	2081-96238	Xg-bb	64.0	19.0
Grasshopper Sparrow	2004	7	19	AHY	F	2081-96239	Xg-Pb	59.0	15.5
Grasshopper Sparrow	2004	7	19	HY	?	2081-96240	Xg-gP	58.0	16.0
Grasshopper Sparrow	2004	7	19	AHY	M	2081-96241	Xb-bg	64.0	17.5
Grasshopper Sparrow	2004	7	19	AHY	M	2081-96242	Xb-PY	62.0	17.0
Grasshopper Sparrow	2005	6	17	AHY	M	2081-96299	MX-Rb	61.0	17.0
Grasshopper Sparrow	2005	6	17	AHY	M	2081-96300	RX-OB	63.0	18.0
Grasshopper Sparrow	2005	6	17	AHY	M	2081-96301	RX-Rg	63.0	16.0
Grasshopper Sparrow	2005	6	17	HY	?	2081-96302	MX-gb		12.0
Grasshopper Sparrow	2005	6	28	AHY	F	2081-96312	RX-OG	58.0	15.5
Grasshopper Sparrow	2005	6	28	AHY	M	2081-96313	MX-Rb	61.0	18.0
Grasshopper Sparrow	2005	6	28	AHY	M	2081-96314	gX-gR	64.0	17.0
Grasshopper Sparrow	2005	7	6	AHY	M	2081-96319	gX-RO	61.0	17.0
Grasshopper Sparrow	2006	6	7	AHY	F	2081-96369	GB-XM	61.0	18.3
Grasshopper Sparrow	2006	6	7	AHY	M	2081-96370	bP-XO	61.0	15.8
Grasshopper Sparrow	2006	6	7	AHY	M	2081-96371	MB-XR	59.0	23.3
Grasshopper Sparrow	2006	6	7	AHY	M	2081-96372	BG-Xb	60.0	16.5
Grasshopper Sparrow	2006	6	7	AHY	M	2081-96373	GO-XO	64.0	18.3
Grasshopper Sparrow	2006	6	15	AHY	M	2081-96377	Wg-Xg	62.0	17.5
Grasshopper Sparrow	2006	6	15	AHY	M	2081-96378	Mb-XG	63.0	17.0
Grasshopper Sparrow	2006	6	15	AHY	M	2081-96379	MB-BR	62.0	16.0
Grasshopper Sparrow	2006	6	15	AHY	M	2081-96380	BM-XB	64.0	17.5
Grasshopper Sparrow	2006	7	25	AHY	F	2081-96399	RP-XO	59.0	17.0
Grasshopper Sparrow	2006	7	25	HY	?	2081-96400	Pg-XB	58.0	16.0
Gray Catbird	2002	7	3	AHY	F	1631-97469		91.0	37.5
Lark Sparrow	2000	7	7	HY	?	1641-61658		85.0	25.5

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Species	Year	Month	Day	Age	Sex	band number	Color	Wing (mm)	Mass (g)
Lark Sparrow	2002	6	6	AHY	M	1641-61676		87.0	29.0
Lark Sparrow	2002	7	12	AHY	F	1641-61677		79.5	25.5
Northern Cardinal	2004	6	9	AHY	M	1641-61696		95.0	56.0
Orchard Oriole	2000	7	17	ASY	M	1641-61659		80.0	22.0
Orchard Oriole	2000	7	17	ASY	M	1641-61660		80.0	23.5
Orchard Oriole	2001	6	28	AHY	M	1641-61701		71.0	20.0
Orchard Oriole	2001	7	6	AHY	M	1641-61702		75.0	23.0
Orchard Oriole	2002	7	16	AHY	F	1641-61678		69.5	
Orchard Oriole	2004	7	8	AHY	M	1641-61697		81.0	22.0

Appendix 1. Birds of Thomson grasslands, Carroll County, Illinois and Thomson Fulton Nature Preserve, Whiteside County, Illinois. Conservation status indicates listed as state endangered (SE) state threatened (ST) or species of conservation concern (CC) in the Illinois Wildlife Action Plan. Type of use includes: A - occurrence during points counts indicates use of adjacent habitat (usually wetlands or forest), F – foraging in or over grassland areas (and trees therein), N – nesting, P – passage through or over grasslands including migrants and non-breeders. Habitats include: A- aerial forager or primarily observed in flight, E – edge between forest and non-forest, F – closed canopy forest, G – grassland, S – savanna, open woodlands and hedgerows in grassland, U – urban and suburban, W – wetlands. Species with common name in italics were not recorded during point counts or banding but in the course of field work on these sites.

Common name	Scientific Name	Conservation Status	Type of use	Habitat
Canada Goose	<i>Branta canadensis</i>		A	W
Mallard	<i>Anas platyrhynchos</i>		N,P	W, G
Blue-winged Teal	<i>Anas discors</i>		N,P	W, G
Ring-necked Pheasant	<i>Phasianus colchicus</i>	non-native	N,P,F	G
Wild Turkey	<i>Meleagris gallopavo</i>		N,P,F	S, F
Northern Bobwhite	<i>Colinus virginianus</i>	CC	N,P,F	E, G
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	recently delisted	A	W
Great Blue Heron	<i>Ardea herodias</i>		A	W
Great Egret	<i>Ardea alba</i>		A	W
Green Heron	<i>Butorides virescens</i>		A	W
Turkey Vulture	<i>Cathartes aura</i>		P	A
Northern Harrier	<i>Circus cyaneus</i>	SE, CC	N,P,F	G
Cooper's Hawk	<i>Accipiter cooperii</i>	recently delisted	P,F	F
Red-tailed Hawk	<i>Buteo jamaicensis</i>		P,F	S
American Kestrel	<i>Falco sparverius</i>		N,P,F	G, S
Killdeer	<i>Charadrius vociferus</i>		N,P,F	W, G
Ring-billed Gull	<i>Larus delawarensis</i>		A	W
Mourning Dove	<i>Zenaida macroura</i>		N,P,F	S,G,U
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	CC	N,F	S,E
Chimney Swift	<i>Chaetura pelagica</i>	CC	F	A
Belted Kingfisher	<i>Ceryle alcyon</i>		A	W
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>		N,P,F	S,F,E,U
Downy Woodpecker	<i>Picoides pubescens</i>		N,P,F	S,F,E,U
Hairy Woodpecker	<i>Picoides villosus</i>		A	S,F
Northern Flicker	<i>Colaptes auratus</i>	CC	N,P,F	S,E,G
Eastern Wood-Pewee	<i>Contopus virens</i>		A	F
Eastern Phoebe	<i>Sayornis phoebe</i>		N,P,F	S,E
Great Crested Flycatcher	<i>Myiarchus crinitus</i>		N,P,F	S,F,E
Eastern Kingbird	<i>Tyrannus tyrannus</i>		N,P,F	G,S
<i>Scissor-tailed Flycatcher</i>	<i>Tyrannus forficatus</i>		P	G
Loggerhead Shrike	<i>Lanius ludovicianus</i>	ST, CC	N,P,F	G
Yellow-throated Vireo	<i>Vireo flavifrons</i>		A	F
Warbling Vireo	<i>Vireo gilvus</i>		A	F,E

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Common name	Scientific Name	Conservation Status	Type of use	Habitat
Blue Jay	<i>Cyanocitta cristata</i>		P	F,S,E,U
American Crow	<i>Corvus brachyrhynchos</i>		P,F	F,S,E,U
Purple Martin	<i>Progne subis</i>		F,P	A
Tree Swallow	<i>Tachycineta bicolor</i>		F,P	A
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>		F,P	A
Bank Swallow	<i>Riparia riparia</i>		F,P	A
Cliff Swallow	<i>Hirundo pyrrhonota</i>		F,P	A
Barn Swallow	<i>Hirundo rustica</i>		F,P	A
Black-capped Chickadee	<i>Poecile atricapillus</i>		N,P	S,F,E,U
White-breasted Nuthatch	<i>Sitta carolinensis</i>		N,P	S,F,E,U
House Wren	<i>Troglodytes aedon</i>		N,P	S,E,U
Eastern Bluebird	<i>Sialia sialis</i>		N,F	S,G
American Robin	<i>Turdus migratorius</i>		N,F,P	S,E,U
Gray Catbird	<i>Dumetella carolinensis</i>		N,F,P	E
Brown Thrasher	<i>Toxostoma rufum</i>	CC	N,F,P	S,E
European Starling	<i>Sturnus vulgaris</i>	non-native	N,F,P	U,S,E
Cedar Waxwing	<i>Bombycilla cedrorum</i>		N,F,P	S
Yellow Warbler	<i>Dendroica petechia</i>		N,P	E
American Redstart	<i>Setophaga ruticilla</i>		A	F
Common Yellowthroat	<i>Geothlypis trichas</i>		N	W,G
Scarlet Tanager	<i>Piranga olivacea</i>		A	F
Chipping Sparrow	<i>Spizella passerina</i>		A,N,F	U,G
Field Sparrow	<i>Spizella pusilla</i>	CC	N,F	G,S
Lark Sparrow	<i>Chondestes grammacus</i>		N,F	G,S
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	CC	N,F	G
Henslow's Sparrow	<i>Ammodramus henslowi</i>	ST, CC	N,F	G
Song Sparrow	<i>Melospiza melodia</i>		A	W,E
Northern Cardinal	<i>Cardinalis cardinalis</i>		N,F,P	E,U
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>		N,F,P	S,F
Blue Grosbeak	<i>Guiraca caerulea</i>		N,F,P	S,E
Indigo Bunting	<i>Passerina cyanea</i>		N,F,P	S,E
Dickcissel	<i>Spiza americana</i>	CC	N,F	G
Red-winged Blackbird	<i>Agelaius phoeniceus</i>		A	W,G
Eastern Meadowlark	<i>Sturnella magna</i>		N,F	G
Western Meadowlark	<i>Sturnella neglecta</i>		N,F	G
Common Grackle	<i>Quiscalus quiscula</i>		F,P	E,W,E
Brown-headed Cowbird	<i>Molothrus ater</i>	nest-parasite	N,F,P	G,E
Orchard Oriole	<i>Icterus spurius</i>		N,F,P	S,E
Baltimore Oriole	<i>Icterus galbula</i>		N,F,P	F,S,E
American Goldfinch	<i>Carduelis tristis</i>		N,F,P	E,G